36/2 September 1970

SOIL conservation

Planning for a better environment

Soil Conservation Service
U.S. Department of Agriculture

XUM

SOIL conservation

September 1970 Vol. 36, No. 2

Changing uses...

Conservation steps toward improving the world around us sometimes go unchronicled. This issue of **Soil Conservation** Magazine contains a selection of reports and notes with a more-than-ordinary application of man's widening effort to make his world more livable and his future more secure.

The discussion by Under Secretary J. Phil Campbell of the U.S. Department of Agriculture (p. 27), of the importance of resource conservation now in designing the America of the future, was drawn from a talk the author gave as a part of the Department's Earth Day observance. It underscores the urgent need for careful decisions in this decade as to the changing uses of our already burdened natural resources.

The change of an orchard enterprise near a rapidly expanding urban community is typical of problems confronting many a farmer in these United States. The decision by the Samuel Pattersons (p. 36) to add a golf course to their farming represents the way a growing number of landowners are coping with economic pressures.

Dust for a generation has been a declining problem in the Great Plains, thanks to the combined efforts of landowners and the forces of conservation. A change in cropping sometimes is the solution. The Big Spring State Hospital in Texas' Southern Plains (p. 30) found that control of blowing dust had a marked effect on the condition of its hundreds of patients.

COVER: No Johnny-come-lately to environmental planning, America's conservation farmers have done it for years. Here, a Pensylvania farm in contour strips of oats and corn.

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SOIL CONSERVATION is the official magazine of the Soil Conservation Service, published monthly by direction of the Secretary of Agriculture as administrative information required for proper transaction of the public business. Use of funds for printing this publication approved by the Director of the Bureau of the Budget July 17, 1968.
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Subscription: $2.50 per year, $3.25 foreign. Single copy 20 cents. Discount of 25 percent on orders of 100 or more sent to same address. Order direct from Superintendent of Documents, Government Printing Office, Washington, D.C. 20402.

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A crucial task for mankind

By J. Phil Campbell
Under Secretary of Agriculture

In spite of our rapid technological advances as a Nation, some of the important things we need to know about environmental interaction have escaped us. To complicate matters, each of us has his own approach to solving environmental problems—making it a challenge to arrive at rational conclusions on virtually anything.

Gradually we are learning about the highly complex interdependency that exists among all living things and the environment . . . that environments manage men even as men manage environments.

We can all agree on one point: Man is the dominant species, and the use of nature to further his own well-being is correct.

People-problems

What, then, is the problem? A part of it is the outgrowth of human impaction—urban congestion and the related problems of squalor and crime.

The birth of each new American —at the rate now of one every 7½ seconds—means that in his expected 70 years of life he will use 26 million tons of water, 21,000 gallons of gasoline, 10,000 pounds of meat, 14 tons of milk and cream, 9,000 pounds of wheat, and great quantities of other products from the earth.

Multiply those figures by the estimated population growth in the United States of an additional 100 million by the end of the century. Throw in the expected dependence of other peoples of the world on certain of our raw materials. At this point I think it becomes abundantly clear that management of the environment is, for mankind, a crucial task.

Nature as enemy

Realization of what we must do to manage our environment is more difficult because of our heritage. From the landing of the Pilgrims through the next 200 years nature was the "enemy." The settlers appreciated the beauty of the wilderness, but their every effort was needed to survive in a hostile environment.

Land neglected

They won the struggle for survival, and agriculture developed into a technology characterized by an attitude of exploitation and harvest. It was a technology careless of the land and the forests, extracting more than it replaced. There was always another frontier, a new field, meadow, or forest. The bounty of the land seemed limitless.

The technological development of industries and cities—made possible by agricultural advances—moved ahead under a competitive economy. This economy dictated that an investment show an immediate profit. Waste management was accomplished at minimum cost. Free disposal in air or water was used as much as possible.

In retrospect, it is not easy to say this was right or wrong. The foresight to avoid the deterioration now visible and the willingness to forego immediate profits might have materially slowed industrialization and the growth of the United States.

One thing is certain. To the extent that the quality of our environment must be restored, we are paying bills incurred long ago.

Without man's stewardship, Nature itself has rarely been productive enough to meet man's needs—certainly not in the numbers in which we exist today and will exist in the future. Yet our resources must serve every economic and social need of mankind. The challenge is to assure that beauty and bounty as well as conservation, development, and use are maximized simultaneously into the very long future.

Record of action

At this point it is probably well to remind ourselves of something too easily forgotten in the present rising tide of public concern with environmental quality. The environmental issue is not a new one. Fifty years ago and more, men were fighting for acceptance of the concept that soil, water, wildlife, forests, and waterpower were renewable resources which might last forever if they were treated and harvested sci-

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entifically, instead of being consumed faster than they were reproduced.

Those men made some impact: men like Hugh Hammond Bennett, first chief of the Soil Conservation Service; Gifford Pinchot, who persuaded the government that conservation was a management tool; and John Muir, whose longtime dream was fulfilled in the establishment of the National Park System.

Landowners cooperating

Agriculture paid some heed; and while the work is far from complete, the record is noteworthy since the Dust Bowl days of the 1930's. By last July, more than 2 million individual farmers, ranchers, communities, and other land users were under voluntarily signed cooperative agreements to put conservation plans into effect. The land involved runs to three quarters of a billion acres—all in conservation programs.

In 1969, the Great Plains Conservation Program was extended for another 10 years. Its provisions were broadened to do a better job in pollution control, fish and wildlife improvement, and in recreation.

Since January of 1969, more than 130 small watershed projects have been approved for Department help —nearly one-seventh of all the projects approved in the 15-year history of the program.

Already this year we have approved USDA planning help to 12 new Resource Conservation and Development projects, for a total of 68 now underway. Most of these projects include accelerated soil and water conservation, development of water resources, social and economic development.

Many DDT uses were cancelled, and we intend to phase out other nonessential uses by the end of 1970. We will be taking similar action toward other pesticides that persist in the environment or endanger human health. Increased research is being applied to the biological control of pests, offering considerable long-term promise in reducing the need for chemical controls.

However noteworthy the record may be, it serves to underscore the need for ever greater action. For example, much remains to be done in the field of waste disposal—animal wastes, wastes from processing of raw agricultural products, plant nutrients, forest and crop residues, inorganic salts and minerals, and certain forms of air pollution. Moreover, many other wastes not originating in agriculture and forestry do great damage to crops, trees, and the landscape. Numerous wastes in both solid and liquid form must be disposed of in rural areas.

The only receptacles into which we can dump our wastes are, so far as we know, the air, the water, and the soil. The painful truth is that relatively little is known about the capacity of each to assimilate pollutants without being irreversibly damaged.

Siltation

Undoubtedly the greatest pollutant of all—and the one least visible to the public eye unless one takes time to look at the Potomac River running red these days—is siltation. Most people think about sediment in relation to erosion and floods on farm, forests, and rangeland. They rarely consider that great amounts of sediment are produced in leveling the land for homes, shopping centers, factories, airports, and warehouses.

The whole urbanization process has become an increasingly troublesome environmental problem and not from the standpoint of sedimentation alone. A study by the American Institute of Planners revealed that land is being urbanized at the rate of 3,000 acres a day.

We are not so much concerned with running out of land as with running short of land for particular uses. Even with a continued rise in total population one-half of the counties in the United States are losing population. A reversal of this trend is not only desirable. It is essential.

There are sound reasons for the orderly development of less densely populated areas. We have the space and we have the ability. Science, technology, and the ingenuity of the American farmers with the help of public agencies, private institutions, and industries serving agriculture have gone a long way toward making this possible.

We continue to produce more and more on fewer and fewer acres in this country. Today less than 50 percent of the Nation's total land area is in farms. Less than 20 percent is classified as cropland. Less than 3 percent of our total land area is in urban and related intensive uses. Thanks to a highly developed agriculture, this country has ample land for other purposes.

There is room for more people to have homes, industries, shopping centers, and cultural institutions in the open country.

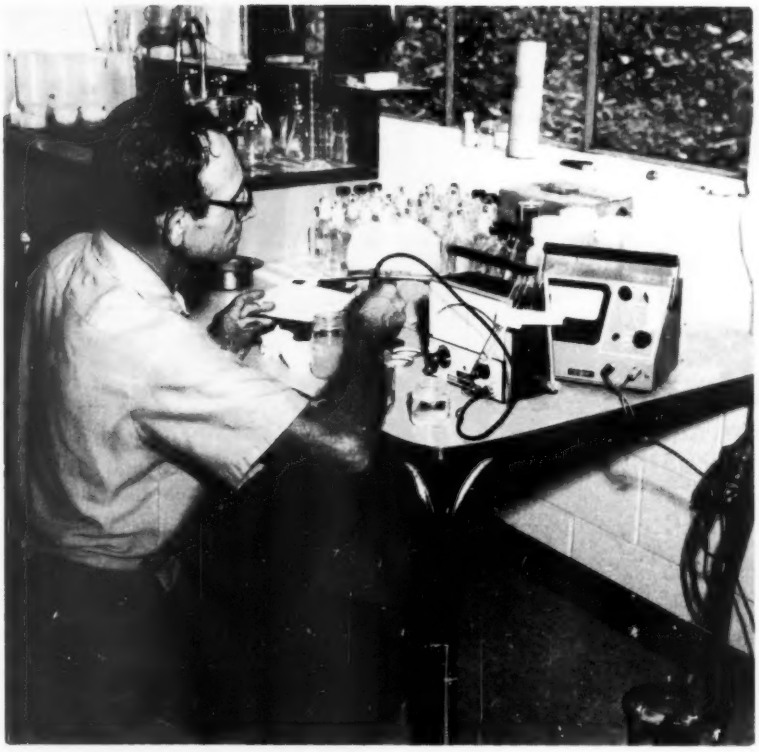
Rural and community development, now and in the future, presents an important frontier of environmental development, one with which the Department has been deeply concerned.

High priorities

With our current know-how plus our ability to extend our research further into the mysteries of natural phenomena, we can accomplish nearly anything we wish if we set high enough priorities. But costs are involved, and costs for environmental improvements have to be equated with costs of other desirable goals of the American public.

The will of the people will prevail. We are seeing evidences of that will being exercised all across the country, particularly among young people. It is a promising sign. To make meaningful decisions, however, people must be well informed. They must be presented with a sound, systematic body of data that will replace visceral reactions with logical actions. This objective education is as critical a need today as the technology of environmental science and management. ♦

New plant clears water and the air



Gene Stephens, manager of Stilwell's new sewage-treatment plant, uses instruments to check system's efficiency.

Clean, clear water flows now in Caney Creek below the new waste-treatment plant in the northeastern Oklahoma town of Stilwell.

Tests show the water has even less impurity than the water in the stream above the plant, a stretch of water that had been considered to be of unusually good quality.

The citizens of Stilwell no longer complain about the strong odor from the waste from a canning plant, the largest commercial employer in Adair County and processor of locally produced fruit and vegetables.

And fish no longer die in the once heavily polluted stretch of the creek below the plant.

Solving the critical pollution problem was the outgrowth of a determined effort by groups united in the Cherokee Hills Resource Conservation and Development Project.

Until nearly a decade ago the principal problem in the community appeared to be lack of enough water.

The company wanted to expand, a move eagerly sought by community leaders. New jobs were needed.

The Sallisaw Creek Watershed Project was the answer to the water-supply problem. The work plan prepared by project sponsors in 1961 with help from the Soil Conservation Service provided for two municipal reservoirs—one for Stilwell and one for Sallisaw, a town at the lower end of the watershed.

Loans through the Farmers Home Administration and a grant from the Economic Development Administration enabled Stilwell to obtain 3,000 acre-feet of water from the new reservoir later named Lake Carson. Employment by the canning plant went up as more fruit and vegetables were processed.

Most of the solids being treated in the waste from the plant were potato peelings, green bean tips, wilted or damaged greens, strawberry caps, and okra ends. The city sewage-treatment plant unsuccessfully tried acid to break down solids before pumping the waste into sewage lagoons.

The city then tried pumping waste into holding basins, and an orchard company began using it for irrigation. The volume of solid waste required the high rates of nitrogen to break down the organic matter. The combination of organic matter and nitrogen resulted in excessive vegetative growth in the orchards rather than in fruit production.

The undesirable odor drew vigorous citizen complaints, and fish kill was reported as far as 5 miles below the treatment plant.

Action to solve the difficult problem was initiated in the RC&D Project. The Oklahoma Development Foundation was asked to help, and Dr. Seward Robb and specialists from the University of Oklahoma began a study. Their goal was an economical unit that would effectively break down solid waste and yield unpolluted water.

The study team recommended a new sewage facility. Stilwell voters approved an $88,000 bond issue to match an Economic Development Administration grant to build it.

The new plant is performing its function well, as tests are proving. Fish are seen in the stream even where the flow from the treatment plant comes in. And Stilwell residents no longer have need to complain about the air they breathe.—GARY L. BULLARD, *biologist, SCS, Cherokee Hills RC&D Project, Tahlequah, Okla.* ♦

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Healthier, happier patients . . .

Grass cover solves hospital's dust problem

District Conservationist Gerald Miller, left, and Dr. Preston Harrison, superintendent of the Big Spring State Hospital, admire a group of sunflower plants—part of the range seeding mixture on the hospital grounds.

Outside, the wind howled in fury, lunging at the building and straining at every window. Clouds of heavy brown dust rolled by, leaving in every room of the big hospital the soft, choking haze that attends every duststorm.

Patients in the State Hospital at Big Spring, Tex., shuddered. Some covered their heads with the bed clothing.

"It was especially bad in spring and fall," Dr. Preston Harrison, psychiatrist and superintendent of the 1,000-bed mental hospital, recalled. "I can't tell you how upsetting the blowing sand was to our patients."

The picture has changed, Dr. Harrison reports, since conservation practices were applied. He gives much credit to Gerald Miller, district conservationist for the Soil Conservation Service at Big Spring, and to Delbert Stanley, who holds the lease on the hospital's 400 acres of cottonland that curves around the buildings to north, west, and south.

Cotton, clean-tilled and harvested in the early fall, leaves the land with only sparse stalks of the crop for protection against soil blowing.

The hard winds of spring and fall blow from west or north, picking up dust and grit from the inadequately protected land and hurling them toward the hospital.

Stanley, with technical help from Miller, worked out a conservation farm plan for the hospital land in 1968. It called for changing the cropland to grass under a 5-year Great Plains Conservation Program contract.

Miller suggested a crop of redtop cane for soil cover the first year, the residue from the crop to be left on the soil's surface as a mulch. Miller explained the crop residue would reduce blowing of the soil through the second year and would conserve moisture, a vital need for seeding grass where annual rainfall averages only 18 inches.

The grass, planted in 1969, now is sufficiently established to protect the soil. In spring 1970 there was little dust from the hospital land.

Dr. Harrison reports the change has produced a marked improvement in patient care at the hospital.

"The patients are healthier, happier, and easier to care for," he said. "Blowing sand seems to have a marked effect on patients such as ours. It makes them extremely restless. It affects their moods, making them depressed and agitated. They can't sleep and, as a result, it takes more tranquilization and more care to offset the effect of the duststorms."

The superintendent emphasized that the electrical charge in the air during a duststorm adversely affects the mentally disturbed. The more dust in the air, the worse the static electricity, he explained. It is this atmospheric condition which is so upsetting to the patients.

"And when the wind blows, the sand covers floors, halls, and equipment with fine grit," he continued. "Sometimes when the patients would get up in the morning, the only clean place in the building would be that part of the bed where they had slept. You'd walk across a room or open a window and it would grate and grind, enough to get on anyone's nerves. The sand dunes would pile up outside, blocking walks. We couldn't get the patients to take the daily walks essential to their treatment."

Dr. Harrison said that a patient who is already depressed becomes more so during a duststorm.

"They would simply give up all hope," he explained. "Their only recourse would be to withdraw from reality. We have had patients making good progress who would suffer severe setbacks during a duststorm."

The hospital staff has observed, too, that since the presence of dust has been reduced there have been fewer respiratory ailments among patients.

Business Manager L. K. Miller, who is not related to the SCS conservationist, was pleased with the conservation work for other reasons.

"We were spending too much money repairing damage caused by the dust," he said. "The last year that land was in cotton it cost us nearly $1,300 to replace electric motors that burned out after one storm. One year we spent $800 to clean the dunes off the lawn, and the next year we paid $1,000 to clean the dunes away again."

Miller remembers it was the same almost every year—replacing bearings in fans and ventilators, trying to keep brakes operating properly in hospital vehicles and the like.

"You can imagine how low our morale sank when we had to go without ice or laundry and the other things electricity helps provide us," he said. "But you know, we haven't had a bit of trouble from sand with any of our equipment since we put that land in grass."

It was the SCS man, Miller, who suggested planting a little sunflower seed with the grass. The seed from plants is relished by birds, especially dove and quail. Surely, he reasoned, the sight of wildlife would be appealing to the patients.

Business Manager Miller looks with favor on expanding the idea. When Stanley's lease expires, the hospital will consider further wildlife improvements, even to the point of turning the entire farm into a wildlife sanctuary.

Dr. Harrison summed up the entire conservation program of the hospital this way: "We have a vastly improved hospital environment—a better place for our patients to live and get the treatment they are here for."—DALE D. ALLEN, *information officer, SCS, Temple, Tex.* ♦

Delbert Stanley shreds weeds off a lovegrass planting on hospital land formerly cropped.

New beach adds new customers

Clayton Barkley, a cooperator with the Washington County Soil and Water Conservation District in New York, dropped into the Soil Conservation Service office in Fort Edward one morning to see about building a beach.

No longer able to do heavy farmwork because of his advancing years, Barkley had built three cottages around his small fishing lake to help with income.

He soon observed that among the family groups renting the cottages not everyone wanted to fish, but almost everyone wanted to swim. Swimming in Barkley's lake meant swimming from a boat which was not ideal for children. This was why cottages were not always rented for the full season. Therefore, Barkley wanted to ask about a beach.

The district conservationist was able to help Barkley choose a place for the beach. Barkley then changed his conservation farm plan to provide for the needed work.

Soon a contractor was grading the beach area and a small parking lot. Muck was removed from the pond's shore and gravel placed there for a base. A heavy layer of sand followed. Tile drains were installed to control the flow from a spring, and a diversion was built to eliminate surface water.

In the winter Barkley circulated a new brochure describing the beach. He had all his cottages rented for the entire season. This led him to build two new cottages.

Increased business enabled Barkley's daughter and her husband to move back to the area to help with the expanded enterprise.

Residents of nearby areas are among those using the beach now, Barkley reports. It pleases him to know that his efforts have produced something the whole community can enjoy.—STANLEY M. ANDERSON, *district conservationist, SCS, Fort Edward, N.Y.* ♦

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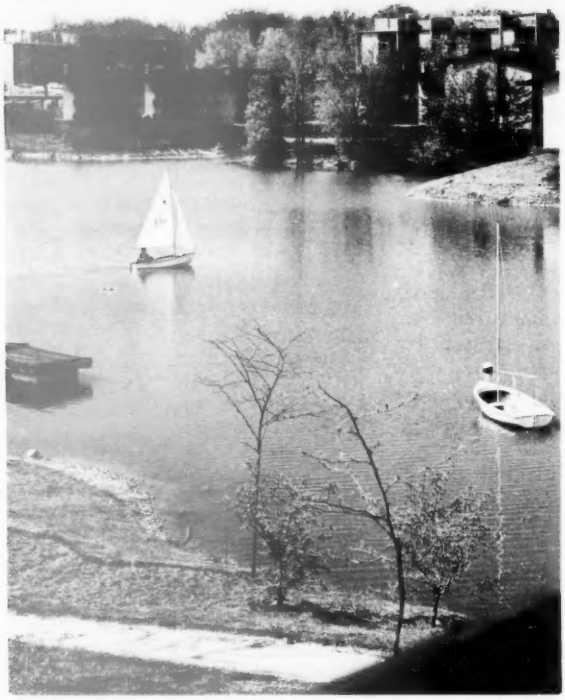

Sailboaters enjoy the water at Four Lakes Apartments, Lisle, Ill. Many trees were retained when this old gravel pit was developed for apartments.

Gravel pit today, subdivision tomorrow

By Richard L. Duesterhaus
Resource conservationist, SCS, Lisle, Ill.

Wes Tonyan of McHenry, Ill., mines gravel for a living. He also builds lakes. In the urbanizing Chicagoland market, gravel and lakes are in strong demand. Tonyan stands to profit from each. Best of all, the two enterprises are parts of the same operation.

One of the former gravel pits is now a beautiful 25-acre lake. Another pit is being carefully shaped as gravel is removed. When Tonyan retires from the gravel supply business a few years hence, he expects to subdivide the area around both lakes. He will have charge of some pretty valuable real estate.

This example of orderly development of land underlain with minerals—from pits to lakes to subdivisions—reveals the shape of things to come. With zoning ordinances getting tougher and with all the talk about eyesores, blighted areas, and wasted resources, developers are finding it economically possible and prudent to find ways to replace blight with beauty.

In Tonyan's case, it's a matter of stockpiling topsoil, shaping the steep banks of the pit as mining progresses, and then replacing the topsoil to produce a fertile seedbed for soil stabilizing grasses. He also plants trees and shrubs for beautification. The water level in the pits is maintained by the surrounding high water table.

Tonyan believes zoning officials should encourage good use of

Wes Tonyan enjoys fishing his lake, a former gravel pit, which he will develop into a subdivision.

gravel pits which, in his case, resulted in dozens of premium lakeside lots. He considers this is better than restriction.

"This land would be virtually worthless if we hadn't planned and carried out the development of this site," he asserted.

A second example of gravel pit development is the "Four Lakes" apartment complex at Lisle, Ill. The developer molded a parcel of unsightly land—a mined-out gravel pit —into an attractive community of 500 apartments. An adjacent tract has been purchased for expansion of the gravel-pit lakes and construction of another 500 apartment units.

Neighbors of the community like the esthetic improvement. Most of the existing trees were retained, the lake shorelines stabilized, and apartments located so that each would present a view of the lakes. The results have been rewarding—virtually no vacancies.

Spoil from the gravel pits has been spread on the adjoining slope to create a ski and winter sports area.

In DuPage County, west of Chicago, county authorities are cooperating with the Forest Preserve District to use an old gravel pit for garbage disposal and at the same time build a public recreation area. A 1,000-foot-long ski trail will be developed on this sanitary landfill site. The DuPage County Forest Preserve District owns the land and is providing facilities for tobogganing, other winter sports, boating, canoeing, and fishing. The site was sealed to avoid pollution of the ground water.

The ideal procedure in such projects is to plan the project before mining any of the gravel or other minerals. This provides for the least moving of spoil. A plan showing the proposed use of the land related to the natural resources is also becoming a requirement with many local zoning officials.

Illinois soil and water conservation districts are working with developers to explore resource-use opportunities. Soil Conservation Service conservationists provide planting and seeding information. Soil maps of these areas before mining help identify the layers (horizons) of the soil profile to stockpile for later topdressing. They also identify those soil horizons not likely to support vegetation.

Conservation practices usually installed on these projects include lake construction, shoreline stabilization, critical area seeding, tree planting, diversions, pond management, and occasionally, such practices as silt basins and grassed waterways.

Practices and planning go together in Illinois to assure both harvest and protection of natural resources. ♦

Hundreds of residents enjoy the ski-slope at Four Lakes.

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Watershed action . . .

STEPPING STONES to community progress

By David S. Farmer
District conservationist, SCS, Farmville, Va.

They had lost good crops year after year. The bottom land had been flooded too often and left covered with sterile silt. Mud and debris filled the stream channel.

The long-suffering farmers along Buffalo Creek in Prince Edward County, Va., decided to act. Today, their land is protected from flooding, the town of Farmville has a much-needed reserve water supply, and the county soon will have an excellent fishing lake.

The transformation began 10 years ago with the Buffalo Creek Small Watershed Project under Public Law 566. The 74,700-acre project, with the Soil Conservation Service assisting the Piedmont Soil and Water Conservation District, included nine floodwater-retarding dams, 26 miles of channel improvement, and 86 miles of roadbank seeding. Forestry management and conservation practices to protect the land also were in the plan.

All structural improvements for the $1,557,579 watershed project have been completed except for 12 miles of channel work.

Primary aim of the project was to protect agricultural land against flooding, but benefits to the nonfarm people of Prince Edward County and the town of Farmville are worth many thousands of dollars. The nine structures now store 350 million gallons of water to give the community an excellent reserve supply.

Dependable water supply helped the Farmville Area Development Corporation to attract two new industries to the Farmville Industrial Park within the last 5 years. The new industries now employ about 1,200 people. Several existing in-

SCS specialists check operation of principal spillway on recreation lake.

dustries have expanded, and Farmville's Longwood College now is completing two new high-rise dormitories that will house 1,000 additional students.

The Buffalo Creek Project gave the people of Prince Edward County an insight into the benefits of good water-resource planning. As a result, landowners, county and town officials, and other interested citizens recently organized the Bush River Watershed Association.

Immediately after its organization, work was begun on two multipurpose structures that will provide facilities for recreation or additional municipal water.

The Virginia Commission of Game and Inland Fisheries is now working with the Piedmont District and SCS to provide for an 814-acre lake on Briery Creek that will be used for both recreation and flood prevention.

Briery Creek Lake will be used for fishing and boating. It will be fertilized at a rate that should provide an annual fish catch of 200 pounds an acre. Picnic areas and campsites are planned, and other kinds of recreation will be developed.

At a recent meeting of the Prince Edward County Board of Supervisors, SCS and the Piedmont District were asked to plan a site on Sandy River as a multi-purpose structure. The preliminary plan calls for a 510-acre lake which would store 5,000 acre-feet of water for use by residents of the county.

You might say the Buffalo Creek Project pointed the way. The residents of the Bush River watershed, aware of the resource potential and the needs of their area, are taking the cue. ♦

Right, top, strips and waterways on the Bernard Garrett farm; center, District Conservationist D. S. Farmer checks highway roadbank seeding; bottom, fun fishing on a 21-acre lake in the Buffalo Creek watershed.

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It was change or sell . . .

Golfers and apples keep family on farm

The farm of Samuel A. Patterson near Cleveland, Ohio, offers a choice—fruit from the Patterson orchard or a round on the 18-hole golf course.

Either contributes to the family's income.

The combination has kept the 400 Patterson acres intact in spite of the mounting pressures of taxes and developers in the Cleveland suburbs.

Patterson made an important decision when his father retired, leaving the farm's operation to him. Costs were rocketing. Patterson sought out the best agricultural information available, including new land-management methods recommended by the Geauga Soil and Water Conservation District and the Soil Conservation Service.

The choice was clear: Change or sell. There were six members of the family to support.

"The crowding I had seen on golf courses suddenly clicked in my mind," Patterson recalled. "I began to investigate that source of income."

When Patterson and his two older sons, Tom and Jim, decided to lay out a golf course, SCS conservationists checked soils' information, drainage patterns, and erosion factors. A poorly drained pasture below a rock outcropping near the Patterson's main fruit-processing shed was selected for the first tee of a nine-hole layout. To make this area usable, SCS designed a tile-drainage system to carry subsurface water away from the field. A 100-yard-long diversion along the upper part of the slope shunts other excess water into a main ditch.

Along the edge of a fairway the Pattersons found a site for an irrigation pond. The SCS soil map indicated suitable waterholding land in that area, and the gentle slope provided a watershed. The site was easily shaped to serve as a water hazard.

The plan called for one of the main orchards to form a border for two holes. Here the fairways dogleg around the fruit trees. In a few places golfers follow paths through the orchard from green to tee.

Patterson fruit farm building, left, adjoins the golf course. Golfers are among the farm's best customers. Above, the Samuel A. Pattersons and son, Tom. Far right, SCS Conservationist Nathaniel Wilder and Samuel Patterson check the grass at the 10th green.

Looking out over the first tee, golfers—and conservationists—can also note the pond and apple orchard in the background.

With the nine-hole course in place and suitable grass cover protecting the new greens, tees, and fairways, Patterson's Orchard Hills Golf and Country Club was opened for business.

In less than a year, business was humming. The Pattersons began planning a nine-hole addition.

Again, SCS helped the family revise the conservation plan to fit the new layout. Fairways were shaped and seeded. More tile was installed, bringing the length of all the tile lines to almost 4 miles. Surface ditches and diversions completed the improved drainage system.

Two new SCS-designed ponds became part of the Orchard Hills course. One pond, covering 1½ acres, more than doubled irrigation water supplied by the original pond. An underground system carries water from the two irrigation ponds to most of the course. The third pond, near the 16th fairway, is a water hazard and an emergency water supply.

With 18 holes completed, the Pattersons mobilized their family talent. Jim, the oldest of the four children and an Ohio State University graduate agronomist, took charge of the orchard. His brother, Tom, took on the management of the golf course. Mary Lou, an Ohio State student, helped her mother with bookkeeping and apple store sales. Jack, a high school student, pitched in wherever needed. He also shows signs of becoming the family golf pro.

"It was easier to coordinate the operation of the golf course and the orchard than we expected," Patterson said. "One operation overlaps the other as seasons change. This keeps our help and equipment productive most of the time."

In early spring, the Pattersons tap a 30-acre sugar bush bordering the course. This yields an average of 300 gallons of maple sirup each season. It is sold at the Patterson farm market along with an annual 15,000 gallons of apple cider and 12,000 bushels of apples.

"One unexpected sales angle comes directly from the golf course," Sam Patterson said. "Golfers walking through the orchards often pick up an apple to eat along the way. That whets their appetite, and they often stop to buy a basket as they head for home. We find that our 55,000 rounds of golf a year sell a lot of apples."

The community shares benefits of the Patterson's farm-recreation operation. The Pattersons hire at least six men full time. Others are hired during the apple harvest season and again during the summer when the course needs attention. In busy seasons, 15 to 20 people are usually on the Patterson payroll.

Though the golf course has become the more profitable part of the family's dual enterprise, Patterson is still expanding his orchard. He planted 100 new peach trees this past year. Other plantings are scheduled.

"Golf and orchard farming give us a cash income for the entire year," Patterson said. "But the real benefit is that our whole family can stay on the farm with enough income for all."—GORDON S. SMITH, *information specialist, SCS, Upper Darby, Pa.* ♦

XUM

Soils map points way to grassland enterprise

By Waldo Rodene and Ray Kubie
District conservationist, SCS, Pawnee City, Nebr., and area conservationist, SCS, Lincoln, Nebr.

Tom Bodie sells grass "on the hoof." The Liberty, Nebr., cattle raiser says he is really a grassland farmer. His cattle harvest the crop. Bodie buys 350-pound calves and puts them on the grass. He markets them at about 850 pounds. His goal is 100 pounds of beef an acre a year.

When Bodie came back from World War II he bought 400 acres of cultivated land that was, in his words, "sand burs, sunflowers, cockleburs, and every other kind of weed that grows, and the land generally was in a thoroughly depleted state of fertility." City-born and inexperienced at farming, he sought help from the Pawnee County Soil and Water Conservation District. A map of his soils showed his land better suited to grass than to cultivation.

Bodie learned the soils on his farm absorb water slowly, and therefore the runoff rate often was high during intense rains.

"The result is high soil loss unless the land is protected," he explained. He followed the recommendations of the Soil Conservation Service for proper land use.

He converted whole fields to native warm-season and cool-season grasses. He built terraces and seeded grassed waterways on remaining cropland to protect the land from further deterioration. He built more than 5 miles of terraces, 17 acres of grassed waterways, and four livestock water dams. All of his rougher land has been put in grass. He retained enough cultivated land to raise a grain supplement for the cattle.

The drought of 1956 showed Bodie that native warm-season species were superior to the cool-season ones for hay and range. His program now includes about 75 percent warm-season grasses and the rest in cool-season grasses like bromegrass, orchardgrass, Reed canarygrass, and fescue. He seeded more than 1,200 acres to native warm-season grasses. He also has some alfalfa.

Conservation management of land and grass is Bodie's key. In converting from row crops to grass, he planted grain sorghum the first 2 years to help in weed control and to provide residue in which to seed the grass. His seedings were either in late fall or early spring.

For the first 5 years the grasses are used for hay because of higher yields during that period. Yet cutting hay removes plant nutrients and causes moisture loss, so production begins to drop. The next 5 years Bodie follows a grazing program based on "take half, leave half" of the production of his key plants. This rule helps to restore moisture and increase growth.

Pastures to be grazed in the winter are selected in advance on the Bodie ranch. Proximity to the farmstead and available water are factors. Bodie doesn't use these wintering areas during the summer, although when rainfall is ample they may be mowed in midsummer, and the bales left in the field. Mowing in this case helps late summer and fall growth.

Bodie feeds grain supplement

At right, Rancher Bodie feeds corn supplement to his animals in winter but relies primarily on grass. At market time the big trucks, left, park for loading in thigh-high grass.

during winter months and practices preventive medicine. He believes cattle are actually healthier when not confined to lots in winter. It eliminates the need for yards and shelter, and manure is scattered on the land—thus controlling pollution and applying sanitation at little cost.

Roundup time is reasonably simple. Bodie has a portable corral and portable loading chute that set upright on the grass where the cattle are. Trucks follow, and when the cattle are loaded the pens knock down and load into the portable chute. Pickups that bring out the riding horses to work the cattle also pull the loading chute with the portable corral.

Over the years Bodie has had to expand in order to use labor efficiently. The operation now covers about 2,000 acres. Most of the land joins, a help in management.

"You can't afford to maintain fences, provide water, and care for cattle in smaller than 160-acre enclosures, particularly if they are some distance from the farmstead," he explained.

Having analyzed soil, climate, labor, and other factors, and applied good management, Bodie has put together a combination that probably will soon reach his goal: 100 pounds of beef an acre, all from grass. ♦

Tile-drainage system improves grove

The first tile-drainage system for citrus, in the Brevard Soil Conservation District, which is located in the heart of the famous Indian River citrus area of Florida, was on Earl Peppercorn's grove. Peppercorn applied to Brevard District 3 years ago for technical help in solving severe water problems affecting his mature citrus grove. The grove was planted on soils with high water tables, and practically all the tree roots were located in the top 12 inches of soil.

Small, inadequate ditches had been dug by hand to remove surface water. These ditches, about 2 feet wide and 2 feet deep, surrounded most of the trees. Tree limbs, leaves, and fallen fruit filled the ditches and caused surface water to stand for 2 to 3 months of the year.

Only hand labor could be used for fertilizing, mowing, pruning, spraying, and harvesting. This hand labor increased costs while yields remained constant.

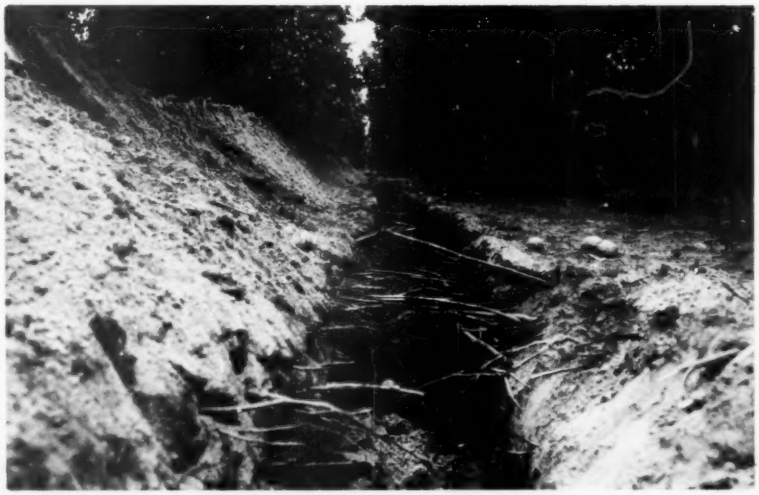
Studies showed that a tile-drainage system would be the best method for water control. A tile plan was developed by Soil Conservation Service specialists. Peppercorn promptly made arrangements for installing the system which called for 5,570 feet of clay tile.

The system was put in with the guidance of the specialists and in accordance with SCS standards. Each line was installed to a designed grade and averages 3½ to 4 feet below ground level. A graduated gravel filtering material was placed around the tile to prevent sand from entering the system. The outlet was stabilized with solid pipe, a concrete floor, and sand bags on the ditchbanks.

The outlet pipe immediately began discharging excess water.

Peppercorn began filling in the small ditches with excavated soil from adjoining highland and using mechanical equipment for fertilizing, spraying, pruning, and harvesting. He reports his trees are healthy, and production costs are lower. And no longer is there standing water in the grove.—BENJAMIN E. WIGGINS, *district conservationist, SCS, Cocoa, Fla.* ♦

A clay tile line being installed, exposing shallow roots of 40-year old grapefruit trees planted on high water table soils.



Educational Film

An educational film for those curious about ecology has been released by Coronet Films. Although it is recommended for junior and senior high students, "Plant-Animal Communities: Ecological Succession" may help adults deal with some of the confusing terms used—and misused—in so many of the conversations and publications inspired by recent events. The film is to show the predictable patterns of plant and animal succession from bare rock or water to climax communities.

XUM

Conservation in action...

Better range and cleaner air

California

In California's Northern Sacramento Valley, Sam Ayers of Red Bluff is converting his brush-infested hill land to improved range without the air and water pollution often resulting from such action.

Hundreds of thousands of acres of marginal range in the northern California area are undergoing improvement through removal of the thick oak and brush to permit growth of more productive and palatable grasses.

In the past, many ranchers have been bulldozing the brush, letting it dry for about 2 years and then burning the woody material along with the grass residue. The smoke rides the air currents for many miles.

When winter rains come, the ash residue, with the nutrients it holds, is washed into streams and reservoirs where it contributes to eutrophication and lowers water quality.

Ayers is permitting the bulldozed material to decompose naturally, lessening the possibility of soil erosion. Sometimes the trees and brush are left where they fall, but often they are formed into loose piles or placed into adjacent gullies. This has created excellent quail habitat. Coupled with ample water from numerous stockponds and adequate food, the practice has had a beneficial effect on quail populations.

Brush placed in the gullies also has been beneficial from another significant standpoint. The velocity of winter runoff water in the gullies has been greatly reduced, thereby limiting the sediment that the water can carry as well as reducing the cutting effect of the water. As a result, growth of the gullies has been slowed considerably and sediment pollution of downstream ponds and waterways reduced.

Removing woody vegetation but leaving five to 10 trees to the acre, followed by seeding improved plant varieties (Lana vetch for example), will increase forage production for use of livestock and wildlife as well as minimize erosion.

Proper management of the total resource, including plants, land, livestock and wildlife, is essential for complete resource use.—WARREN W. BROWN, *district conservationist, SCS, Red Bluff, Calif.*

Piles of brush on Sam Ayers' cleared range reduce erosion and provide quail habitat.

Jack Gray adjusts a motor on one of his rental boats at Gray's Ranch.

Oklahoma

Owner adds camping to his ranch plan

Gray's Ranch is one of the finest campgrounds on sprawling Grand Lake in northeastern Oklahoma.

Most of the land surrounding the big lakes is federally owned in Oklahoma. Jack Gray's farm is an exception. He bought the land with its mile of lake front in 1945 soon after the lake was built. He wanted to raise cattle, but the idea of recreation development was in the back of his mind.

As a cooperator with the Ottawa County Soil and Water Conservation District, Gray worked with District Conservationist K. C. Bennett of the Soil Conservation Service in carrying out a conservation ranch plan. The plan included improved pastures and stock ponds for the cattle.

Gray noticed in a newspaper that SCS was giving help to landowners who wanted to develop recreational enterprises. He got in touch with Bennett again.

The recreation plan Gray worked out with Bennett's help included a landing strip, a 2,500-foot access road, a swimming beach, and sites for 30 mobile homes.

"We agreed not to disturb the natural beauty of the area any more than necessary," Gray said, indicating some of the stately trees around the grounds.

As many as 300 persons have camped at Gray's Ranch over a weekend. It is a popular place for the meetings of camping clubs. Out-of-state automobiles and trailers are a common sight. But normally the camp is not too crowded for a visitor to find a suitable place for enjoying the serenity of the quiet countryside.—DAN F. CROOM, *information specialist, SCS, Stillwater, Okla.*

Utah

A problem becomes a park

The city park in Lindon, Utah, is —as parks should be—a place of beauty and fun.

Residents and visitors alike relax in its quiet surroundings or enjoy its playground.

But not many months ago officials of the city and the Hollow Water Irrigation Company whose canal and ditches crossed the park were ready to write it off as a nightmare to forget.

The park area, a gift to the city by the Lindon Lions Club, was so chopped up by the waterways that usable areas were limited. Native vegetation choked the canal and ditches, and seepage was a problem. Visitors often were at odds with the users of irrigation water. Maintenance costs of park and canal system soared.

The irrigation company officials asked the Alpine Soil Conservation District for help. The Soil Conservation Service conservationist assigned to the district suggested a plan which, in cooperation with Lindon, could solve the company problems and in addition improve the park area.

The plan called for the collecting of springs and seeps, new irrigation pipelines and channels, and relocating the waterline, powerlines, roads, and rest rooms.

Construction was begun and the irrigation company, with assistance from the Agricultural Stabilization and Conservation Service and SCS, installed 1,000 feet of drainpipe, 500 feet of irrigation pipeline, and 1,100 feet of concrete lining.

The city of Lindon leveled the area, moved about 25,000 cubic yards of earth, and relocated the waterline and powerlines. The city also planted grass and installed two ball diamonds. The Lindon Riding Club added a lighted horse arena.

The park today? It's an asset of which any city could be proud. To the people of Lindon it is a matter of special pride. Their planning and effort made the change.—GERALD HANSEN, *resource conservationist, SCS, Provo, Utah.*

Illinois

Reduced tillage wins championship

John F. Brokaw, an Illinois farmer and the 1969 national champion soybean grower, used reduced tillage methods to help produce more than 76 bushels of soybeans an acre. His record won an all-expense trip to Japan for himself and his wife, Majorie.

Brokaw, a cooperator with the Henderson County Soil and Water Conservation District, chopped corn stalks in the fall and plowed the field in the spring. He used a four-row minimum tillage planter set at 36 inches, then doubled back down the middles to make 18-inch rows. Success with his weed-control program had convinced him he could safely use the narrow rows, rotary hoe once, and eliminate all row cultivation. It worked.

The Brokaws operate a 400-acre stock and grain farm 2 miles west of Raritan, Ill., where he maintains a 180-beef-cow herd on improved pasture. Mr. Brokaw is attending Western Illinois University, working toward a degree in psychology. —JAY FARR, *district conservationist, SCS, Stronghurst, Ill.*

Tennessee

Tract is converted to camping and fishing

People stopping for fishing supplies and camping information prompted W. C. Monroe, Jr., to start a camping and fishing enterprise in Clay County, Tenn. It is known as Riverside Camper Park.

Monroe's store is near the outer edge of Celina between this county seat town and Dale Hollow Dam, 4 miles upstream on the Obey River. The dam was built by the U.S. Army Corps of Engineers in the early 1940's. The fishing and recreation lake is popular among outdoor lovers within a 200-mile radius, seeking the challenge of record-breaking smallmouth bass, rainbow trout, or huge walleye.

Monroe got to thinking of a tract of land between his store and the dam and remembered an artesian well which resulted from an oil driller's failure. He discussed the potential of these 7 acres and the artesian well with the local directors of the Hull-York Resource Conservation and Development Association and the soil conservation district supervisors of Clay County. The Soil Conservation Service provided technical help to plan the two-fold recreation enterprise.

Monroe built five small lakes to grow catfish, using the artesian well as the source of water. He leased adjacent land, built 2,500 feet of access road, and established 24 modern hookups for mobile campers.

The park is proving to be a favorite spot for outdoor families.

"I've only been in business during one tourist season," said Monroe, "but business is good. Campers come in for one or two nights and stay a week. Twenty-three of the 24 hookups were filled over the 4th of July weekend. Those disappointed in their fishing at Dale Hollow Lake or in the river assured themselves of a fish fry by catching a catfish or two from one of the small lakes."—M. B. SIMPSON, *district conservationist, SCS, Celina, Tenn.* ♦

XUM

Range fire triggers new resource plan

A new approach to resource conservation planning in Idaho got its start 3 years ago when 82,000 acres of rangeland in southern Twin Falls County was burned in late summer.

Through a mighty team effort involving the ranch operators and federal and state agencies, the disastrous effects of the fire were held to a minimum. Measures insuring rehabilitation of the damaged area were virtually complete by snowfall.

Since that emergency, the combining of forces in planning is an approach that has gained widening acceptance in Idaho. We call it "coordinated resource conservation planning." It works.

Altogether the agencies and individuals invested a third of a million dollars in the rehabilitation effort. Funds for the work came from federal and state agencies—the Soil Conservation Service, Forest Service, Agricultural Stabilization and Conservation Service, Bureau of Land Management—and from the Idaho State Land Department and Idaho Fish and Game Department. Local banks made loans to landowners.

Seeding of forage grasses and plants needed by wildlife for food and cover began at once. Siberian wheatgrass and intermediate wheatgrass were seeded on the burn. Bluebunch wheatgrass and Idaho fescue came back naturally on the unburned areas.

In some of the burned areas Ladak alfalfa was seeded with the wheatgrass to provide for upland game birds such as chukkar and gray partridge and sage grouse.

Watering troughs for livestock were placed where they would be needed. Some of the troughs were fitted with "dicky bird diving boards," small ramps, to permit safe wildlife use of the water.

As a result of the experience, resource-management plans are being developed to protect the investment in public and private money. The plans are "total resource" plans. They take into account all resource-conservation needs and interests. Private owners, the Bureau of Land Management, and the local soil conservation district are the leading participants.

The goal is to provide for long-term management of all the natural resources of the rangeland, whether the resources are public or private.

The cooperative resource plans have been worked out step by step with Twin Falls County ranchers, John Miracle, Ed Baker, Floyd Sharp, and Laird Noh. BLM area managers, Bob Brock and Ken Kuhlman, and the SCS range conservationist and others provided the technical assistance.

Watersheds were given primary consideration because the downstream communities are dependent upon the clean water that flows from these ranges. The dollar returns from livestock grazing, while vital to the individual using this resource, are actually secondary in relation to the total needs of the watershed.

The need for the highest quality forage yield on a sustained basis is met by designing grazing programs encompassing all the resources used by the livestock producer. Programs are developed to meet the needs of the particular forage plants and type of livestock of the ranch. No two grazing programs are the same.

The food and habitat requirements for wildlife are given consideration. Bitterbrush, the main winter forage for mule deer, has been planted, and it is hoped the plants will increase naturally. The primary byproduct of managing this wildlife habitat is improved hunting. Public picnic areas offer clean, clear drinking water, and the wide open spaces also provide a recreation use for this resource.

The end result of people working together is a practical resource-conservation plan satisfying all the needs of those using and those managing the rangeland environment.—GARY R. EVANS, *range conservationist, SCS, Pocatello, Idaho.* ♦

Floyd Sharp, Twin Falls County rancher, left, discusses his grazing program with conservation specialists.

Oklahoma tour links history, conservation

By Myron A. Hurd
District conservationist, SCS, Claremore, Okla.

Residents of Rogers County, Okla., are discovering new scenic, historic, and conservation points of interest they somehow had previously overlooked. A succession of increasingly popular tours has been the means.

A fourth tour will have area eyes on the resplendent fall foliage and on the conservation work of landowners along the way.

The tour idea took hold after specialists of the Soil Conservation Service made an inventory of the area's rich potential for recreation and historic-site development. It was an idea that fitted into the program of the agriculture committee of the Claremore Chamber of Commerce.

The chamber committee enlisted the Claremont Garden Club and the Pocahontas Indian Women's Club in starting things off in April 1969 with a dogwood-conservation-historical tour. More than 450 residents joined the 2-hour adventure on a Sunday afternoon. Others obtained descriptive literature prepared by the committee and drove the 47-mile route later.

Flowering dogwood, conservation practices, and historic sites seemed to draw equal attention on the tour.

Encouraged, the committee held a foliage-conservation-historical tour in October 1969 and the second dogwood-conservation tour in April 1970. The number of participants increased each time, and additional organizations offered to help as cosponsors.

In addition to the original sponsors, the Catoosa, Chelsea, Inola, and Oologah Chambers of Commerce, Chelsea Garden Club, Will Rogers Round-Up Club, Citizens Band Radio Club, React Club, and Civil Defense group joined in.

The chambers of commerce adopted the spring and fall tours as annual events. Tentative plans are being discussed for permanent markers for historic sites and for maps to designate the sites considered most important. The spring and fall tours then can be routed to include the historic sites while presenting the conservation points of interest, flowering dogwood in the spring, or foliage in the fall.

The multiple-interest tours seem to reach the more than 90 percent of nonfarm residents as well as many who occupy and farm the land and whom conservationists have served.

Although the conservation practices shown are largely conventional for the area they add much landscaped beauty to the land and give the viewer a knowledge of land uses and treatment.

Most soil depletion and erosion in the area has occurred since Oklahoma became a state 63 years ago and land passed to private ownership. Some 75 percent of the topsoil was lost from many farms. Wheat production dropped.

Since the Rogers County Soil and Water Conservation District was organized in 1943, most of the 1,870 landowners have become district cooperators. They have built 600 miles of terraces and diversions, more than 4,000 ponds and reservoirs, drained 3,000 acres, planted 60,000 acres of tame pasture, and restored about 180,000 acres of native bluestem grasses with range-management practices. This has given stability to the agriculturally based economy.

Rogers County history dates from the arrival of the Osage Indians from Kansas in the French-owned Grand River Valley in 1796 and the purchase of these lands by the United States with the Louisiana Purchase in 1803.

The formation of Indian Territory resulted in removal of Osages to the Osage Nation, starting about 1809, and removal of the Cherokees from Georgia, North Carolina, and Tennessee in 1837.

The War Between the States resulted in an exodus of Cherokees to Texas or Kansas. In 1867 the Cherokees returned from the Civil War and established Cooweescoowee District, Cherokee Nation, with the seat of government at Kephart Springs. The seat of government was moved to Claremore after the Frisco Railroad was built in 1882. The Indian Nation had its own government until Oklahoma became a state.

In addition to the homes of the earliest Cherokee settlers and the village sites of Chief Blackdog and "Clahmo" of the Osages, the county contains sites of the old Cherokee courthouse, three voting precincts, Cherokee schools, churches and cemeteries, and other points of historic interest.

The home of Will Rogers, world famous cowboy, actor, and humorist, built by his father Clem in 1875, is now a state park and one of the tour stops.

There are probably few counties or conservation districts in the United States that do not have sufficient attractions for multi-interest tours. Since touring is one of America's foremost recreation activities, the problem is merely marking enough of the varied attractions along all weather roads and then providing a touring guide for tourists to follow.♦

XUM

Meetings . . .

National issues challenge Recreation and Parks

The 1970 Congress for Recreation and Parks sponsored by the National Recreation and Park Association will take place September 27-30 in Philadelphia, Pa.

Among topics to be explored are: "National Issues and Critical Relationships;" "Legal Action to Promote Environmental Quality;" "Parks and Recreation: The Challenge of Manpower;" and "NRPA in the 70's."

A "first time" congress feature offers educational tours and includes onsite educational sessions; authoritative briefing at each tour location; and opportunities for in-depth analysis of operational details, manpower problems, programing, finance, and legislation.

Fire and management symposium topics

The Intermountain Forest Fire Research Council will sponsor a symposium in Missoula, Mont., October 27-29, on "The Role of Fire in the Forests of the Intermountain West." The discussion parts will be "Natural Role of Fire," "Man's Impact," "Fire Management Direction," and "Conclusions." Sessions will be mainly on the campus of the University of Montana with portions in the Florence Hotel.

Societies discuss many conservation problems

The International Association of Game, Fish and Conservation Commissioners will meet jointly with the American Fisheries Society, September 16-18 in New York, N.Y.

Some objectives of the association are: (1) Cultivate more mutual understanding among officials or coordinate the efforts of agencies engaged in conservation of natural resources and for the protection, preservation, and management of wildlife, forests, waters, and soils; (2) promote fish culture and fisheries management, and investigate and advise with respect to the introduction of new species and varieties of fish, game, and useful birds; (3) create and foster a healthy public sentiment in favor of better laws for protection of natural resources; and (4) assist the duly constituted authorities in enforcing laws for the protection of natural resources, including wildlife and its habitat.

Dates and places

September 13-16, Farm and Industrial Equipment Institute, Toronto, Canada.

13-16, American Fisheries Society, New York, N.Y.

16-18, International Assoc. of Game, Fish and Conservation Commissioners, New York, N.Y.

27-30, National Recreation & Park Association, Philadelphia, Pa.

October

4-8, American Forestry Association, Atlanta, Ga.

4-9, Water Pollution Control Federation, Boston, Mass.

4-9, International Union of Biological Science, Washington, D.C.

7-10, National Conference of Editorial Writers, Boston, Mass.

10-14, American Bankers Association, Miami Beach, Fla.

11-15, Society of American Foresters, Las Vegas, Nev.

12-16, Future Farmers of America, Kansas City, Mo.

17-21, American Institute of Planners, Minneapolis, Minn.

18-21, American Chamber of Commerce Executives, Pittsburgh, Pa.

19-23, American Society of Civil Engineers, New York, N.Y.

21-24, National Association of Biology Teachers, Denver, Colo.

22-24, Association of Engineering Geologists, Washington, D.C.

26-30, American Water Resources Association, Las Vegas, Nev. ♦

Review

The Soil Conservation Service. BY D. HARPER SIMMS. *1970. Praeger Publishers, New York. 210 pp., illus. $8.50.*

Until March 1968, D. Harper Simms was Director of the Information Division for the Soil Conservation Service. He has written a book which should be tremendously useful in schools of agriculture and in SCS's own extensive training program. Hopefully, with the increasing attention to quality of environment, it will also reach many students in other academic disciplines. It shows how, working within the system and in opposition to some powerful vested interests, a monumental job in arresting the destructive exploitation of our renewable resources has been achieved. It points the way toward further progress. It succeeds in being both encyclopedic and readable, a rare combination.

Following a short history of the early years of the agency, the author describes in detail its organization and programs. Then its relations with soil conservation districts, with state governments and land-grant colleges, with other Government departments and agencies within the Department of Agriculture, with the Congress, and finally with the public are discussed.

The reviewer is a little disappointed that the image of Bennett as a master of bureaucratic intrigue does not come through more clearly. The author does not tell us directly that the controversy between Bennett and the USDA Bureau of Soils (where Bennett was a junior officer) was behind the establishment of the Soil Erosion Service outside of the Department. In this and in other instances Bennett bypassed his superiors. Furthermore, he neglects to mention that many of Bennett's early demonstration projects were on the farms of men who had

political muscle. Secretary of the Interior Harold Ickes' objections to demonstrations on private land led Bennett to seek the transfer of the Service back to the Department of Agriculture. His career demonstrates mastery of "the art of the possible," an indispensible skill for those who would implement peaceful change.

Career civil servants in SCS will enjoy reading this book for its nostalgic accounts of battles fought and won. Those who have been stung by the criticisms of Robert J. Morgan, Marion Clawson, and Charles M. Hardin will be comforted by Harper Simms' rebuttal. The future contribution of SCS to preserving and enhancing man's environment seems unlimited if the agency has the wisdom and the foresight to take up future challenges as it has those of the past.—JANE M. PORTER, *historian, Economic Research Service, Washington, D.C.*

Wildlife for America. BY WILLIAM R. VAN DERSAL. *1970. Revised and enlarged edition. Henry Z. Walck, New York. 160 pp., illus. $6.00.*

Wildlife for America is the second in Dr. Van Dersal's trilogy of books on resources to be brought up to date and enlarged in response to the growing concern for the natural environment.

Like *The Land Renewed* (1946, rev. 1968) and *Water for America* (1956), it was coauthored originally with Edward H. Graham, who did not live to participate in their revision.

The new edition of "Wildlife" uses the same format as its companions: A brief essay on a single topic on every other page, each faced by a handsome photograph on the same topic. The style of writing is simple and direct; it presumes no prior knowledge of the subject by the reader.

Even more, perhaps, than the other two books, *Wildlife for America* sets forth the viewpoint, the rationale, and the operating program of the Soil Conservation Service with respect to the resource under discussion. Although not conceived primarily as a wildlife conservation agency, SCS from the beginning has followed an official line of concern for wildlife as a product of the land.

Both Dr. Graham and Dr. Van Dersal, each in turn as head of the wildlife (or biology) division of the Service, helped to develop and shape that policy. In his dedicatory note, Dr. Van Dersal credits the beginning of that philosophy to the first man to lead the wildlife and biological work of SCS, Ernest G. Holt, "one of America's great wildlife conservationists."

The text, however, is free of any agency "slant" that would affect the reader who did not recognize the origins of the ideas and practices set forth. The book stands on its own merits as a lucid and informative introduction to wildlife conservation in America.—B.O.O.

New publications

Frontiers in Conservation. *1969. Proceedings of the 24th Annual Meeting Soil Conservation Soc. of America, August 10-13, 1969.* 159 pp. Soil Conservation Soc. of America, 7515 Northeast Ankeny Road, Ankeny, Iowa 50021. $5. Contains 44 papers. Majority of the papers presented are under the headings: "Soil and Land Management to Meet Conservation Goals," "Water Resources Utilization and Management," "Wastes in Relation to Agriculture and Society," "Outdoor Recreational and Natural Beauty Needs and Opportunities," "Urban—Suburban Conservation," and "Utilization of Land to Meet Future Needs." The proceedings also contains information about the society's technical committees and the papers of a student symposium.

Propensity for Change Among the Rural Poor in the Mississippi Delta: A Study of the Roots of Social Mobility. BY C. HOBSON BRYAN AND ALVIN L. BERTRAND. *1970. USDA Agr. Econ. Rpt. 185. 22 pp.* Describes the characteristics of poor family heads in rural areas who have high potential for breaking out of poverty. Data were obtained from a randomized, block sample of 1,249 rural inhabitants in the Delta areas of Arkansas, Missouri, Mississippi, and Louisiana.

Proceedings of the National Conference on Sediment Control. *Washington, D.C., Sept. 14-16, 1969. 1970.* U.S. Dept. Housing and Urban Development, Office of Metropolitan Planning and Development, Office of Planning Assistance and Standards. 53 pp. Presents 10 papers by a member of the U.S. Senate, specialists in federal and county governments, and a national association.

Change in Farm Production and Efficency, A Summary Report. *1970. USDA Statstical Bull. 233. 17 pp.* Combines major time series data to facilitate an appraisal of changes in farm production, production inputs, and efficiency. Data are presented for the United States and for most series by the 10 farm production regions. A brief text highlights changes from the previous production year or the base period.

Search for Solitude, Our Wilderness Heritage. *1970. USDA PA-942. 32 pp., illus. $0.65.* Handsomely illustrated in color. Presents history of the wilderness and primitive areas and lists the areas in the National Forests in California, the Northwest (Oreg. and Wash.), the Rockies (Colo., Idaho, Mont., Nev., Utah, Wyo.), the Southwest (Ariz., and N. Mex.), the Lake States (Minn.), the Southeast (N.C.), and the Northeast (N.H.) with a map showing these areas.

How a Tree Grows. *1970. USDA Forest Service and Soil Conservation Service FS-32. 8 pp., illus. $0.10.* Gives the parts and stages of growth of the tree, the close relationship between the tree and the soil, and a description of the soil in the Northeast and Great Lakes Region.

Pollution Caused Fish Kills 1968. *1969. U.S. Dept. of Interior, Federal Water Pollution Control Administration. 16 pp., illus.* Annual census of fish kills began in June 1960; since that time 103,380,000 fish have been reported killed in 2,830 incidents. Highlights are given from the reports.

Reclamation's Recreational Opportunities. *No date. U.S. Dept. of Interior, Bureau of Reclamation. 10 pp., illus. $0.25.* Lists facilities and recreation uses on Federal Reclamation projects in the U.S.

Got a Forestry Problem? Extension Foresters Can Help. *1970. USDA Cooperative Extension Work. 8 pp.* A folder with information on Extension forestry and the address of the director of the Extension Service in each State.

Soil surveys

Randall County, Texas. BY LOUIS JACQUOT, LUTHER C. GEIGER, BILLY R. CHANCE, AND WILBUR TRIPP. *1970. 61 pp., illus.; with maps 3.17 inches to the mile (1:20,000).*

XUM

Recon . . .

Southern Pacific Railroad estimates annual savings of more than $52,000 a mile from a windbreak and dikes along 9 miles of track near Palm Springs, Calif., reports SCS Woodland Conservationist Robert A. Dellberg. The firm estimated that the protective planting of tamarisk will double the life expectancy of rails as well as reduce sand damage to trains and safety equipment. SCS recommendations through the Coachella Valley Soil Conservation District helped the railroad company deal with a sand problem that had plagued officials since 1879.

Schedules and methods for erosion control during highway construction must be approved by New Jersey state highway engineers before contractors may start work on federally aided projects. Contractors must incorporate all permanent control measures as early as possible. They must also be ready to use temporary controls such as seeding and mulching to correct conditions that may not have been foreseen during the design stage. State engineers have the authority to limit the surface area exposed by excavation, borrow, and fill operations. Under no conditions will the area exposed by clearing and grubbing exceed 750,000 square feet without the supervising engineer's approval.

Flood-insurance studies are being done by SCS for the Federal Insurance Administration, U.S. Department of Housing and Urban Development. Flood-zone maps and actuarial rate tables will be used by FIA to determine those areas eligible for federally supported flood insurance as well as premium rates for property. Actuarial rates for buildings and their contents are based on computations of average annual damage that relate flood frequency and damageable values at varying elevations. Studies have been completed for the city of Matewan and part of the Mate Creek watershed in Mingo County, W. Va.; and Pompton Lakes, N.J. Similar studies underway involve areas in Fairfax City, Va.; Columbus, Ga.; Sinton and Agua Dulce, Tex.; Lincoln, Nebr.; Fort Dodge, Iowa; Rochester, Minn.; Fargo, N.Dak.; and West Hartford, Conn.

A 2-year program of sediment-control demonstration and evaluation is starting in Columbia, Md. Hittman Associates, Inc., has developed a plan for gathering technical and economic performance data on storm runoff pollution abatement methods. District Conservationist Elmer Sauer, assisting the Howard Soil Conservation District, and the Maryland State Office of the Soil Conservation Service are assisting the private research and development contracting firm that made Columbia its headquarters early in the life of the 3-year-old "new town" between Washington, D.C., and Baltimore, Md. Project staff will work with builders through the Rouse Company, chief coordinator of development in the 15,000-acre tract in the Howard Soil Conservation District. Studies will be conducted in a 200-acre watershed within the town, concurrent with the urbanization of a presently rural area. Effectiveness and feasibility of control measures will be reported. The $432,000 project administered by the Maryland Department of Water Resources will be funded in part by a grant from the U.S. Department of Interior. Builders will be reimbursed only when researchers ask for work exceeding requirements of the state's sediment control law.

Student power helped Conway, N.H., with its solid waste-disposal problem. Four engineering students from the University of New Hampshire volunteered to live near the town and supervise construction of an open pit incinerator. Under guidance of an instructor from the university's engineering experiment station, students surveyed the site, laid out plans, prepared specifications and did final drawings for a smokeless, forced-air incinerator now in operation. Conway, the North Country Resource Conservation and Development Project, Inc., New Hampshire-Vermont Development Council, and the New England Regional Commission are backing the project.

Green wood excelsior mulch is a satisfactory replacement for straw mulch held in place with asphalt, according to Minnesota Highway Department tests. Both may be used to prevent erosion on newly seeded roadsides. Although long-fibered wood excelsior fibers need not be tacked down with asphalt, they must be green and of proper length for the desired clinging effect. Excelsior mulch has an advantage over straw in builtup areas because the chance of spraying buildings and cars with blowing asphalt is eliminated.

Differences in insurance premiums may figure in both the crusade for flood prevention and the case against flood-plain development. Actuarial insurance rates (i.e., those based on the real degree of flood risk) can vary within the same community. For example, in Alexandria, Va., a homeowner in a high-risk section may pay as much as $2.63 per $100 of property value. In minimal-risk sections, the rate is as low as 5 cents per $100. Based on these figures from the April 1970 issue of *Changing Times* (The Kiplinger Magazine), the annual premium for a $20,000 house could range from $30 well above the high water mark to $526 in a flood-prone area.

A part to play

We have met the enemy, and he is us.

This comment by Pogo in the comic strip so well fits the subject of the environment that it is a slogan of many activists today.

Every citizen—consumer and conservationist alike—has had a part in creating the kind of environment we all live in, and he has both the chance and the responsibility to help improve it.

Someone else said, "Why does it take less energy to form a Committee To Improve the Environment than it does to bend over to pick up a gum wrapper?" This suggests that positive action begins best at home.

More people need to stop harping about the environment and start helping. Their energies are needed for both litter-picking **and** committee work—and more. Their understanding is needed if concern is to be translated into meaningful action.

With the current emotional pitch of environmental concern in the United States, it is easy to forget that many people have worked most of their lives to improve the environment—and with significant results. Leaders of 3,000 local conservation districts, 2 million land owners and operators, and thousands of professional conservationists in SCS and many other agencies have been working together. In many areas, their efforts have made the water cleaner, the air fresher, the land better looking and more useful.

Conservation districts continue to broaden their programs to do a better job in environmental improvement. They continue to get more and more requests for help. They would welcome some new hands and new ideas.

The Soil Conservation Service and other agencies continue to adapt conservation measures to new environmental uses, to develop new conservation measures for specific environmental needs, and to give the best help possible in "traditional" conservation work that already has made a telling impact on environmental quality. We, too, welcome new hands and new ideas.

Conservation districts and agencies together have some challenges in their mutual efforts:

- To see that all conservation work is installed with full attention to its overall impact on the environment;
- To see that all conservation work is properly maintained so that its impact continues to be favorable;
- To see that all special-interest groups have the opportunity to participate—from the outset—in planning conservation projects;
- And perhaps most important of all, to help inform the public accurately about the state of the environment and alternatives for its improvement. Meaningful individual action and meaningful community planning come from understanding the facts about the condition and the potential of natural resources.

This Nation can gain a high standard of living for its citizens without losing those very resources that make this country a good place to live. We have the technology; there are growing indications that we have the will and the willingness to pay the cost of a high-quality environment. I am confident we will make it, if we individually and collectively work toward the goal.

Kenneth E. Grant

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Wild cane supplements tree windbreaks

Wild sugarcane, a plant brought to Hawaii by the early Polynesians, is being put to a use the "old Hawaiians" never anticipated.

Polynesian immigrants to the Waimea district used the cane as a source of sugar and used parts of the plant for braiding hats and thatching houses.

Modern farmers in the area long have been troubled by blowing soil and wind damage to crops, especially to new seedings. They had planted miles of tree windbreaks in the older homestead section, but they needed still more protection.

One of the first problems faced by farmers when the Lalamilo farmlots were opened in 1961 was the development of windbreaks. They knew that tree windbreaks are the best long-term protection. But for immediate protection they needed something that would be easy to establish and that would require a minimum of space.

Tests showed wild sugarcane could give good protection in about 6 months. The cane stands straight, does not spread rapidly, and takes only a 6- to 10-foot strip of land out of crop production. Farmers found they need to space the windbreaks every 80 to 120 feet. The cane grows about 10 feet tall and gives protection horizontally for 10 to 12 times its height.

With assistance from Soil Conservation Service specialists working with the Mauna Kea Soil and Water Conservation District and from the State Division of Forestry, Lalamilo farmers now are planning and planting windbreak systems using primary windbreaks of trees and secondary windbreaks of the wild sugarcane.—GENE COX, *assistant state resource conservationist, SCS, Honolulu, Hawaii.* ♦

Ten-foot-tall, thick growing wild sugarcane, quick to establish and sturdy against the strong Hawaiian wind, has proved a boon to Lalamilo farmers waiting for tree windbreaks to develop. Inadequate windbreak protection (below) means the lifting of soil by the wind and harm to young crops.

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